19

What is Claimed is:

- 1. A method for predicting an individual's bronchodilating response to an agonist of β_2AR , which comprises determining the individual's genotype for the +491PS, wherein a heterozygous C/T genotype or a homozygous T/T genotype indicates the individual is likely to exhibit a poor bronchodilating response to the agonist.
- 2. The method of claim 1, wherein the agonist is selected from the group consisting of salmeterol, albuterol, metaproterenol, terbutaline and formoterol.
 - 3. The method of claim 2, wherein the agonist is salmeterol.
 - 4. The method of claim 3, wherein the individual suffers from asthma or COPD.
- 5. The method of claim 1, wherein determining the patient's genotype comprises isolating from the individual a nucleic acid mixture comprising the two copies of the β_2AR gene, or a fragment thereof, that are present in the individual and determining the identity of the nucleotide pair at a position corresponding to the +491PS in the two copies in order to assign a β_2AR genotype to the individual.
- 6. A method for predicting a patient's bronchodilating response to an agonist of β_2AR , which comprises assaying a sample from the patient for expression of the Ile164 β_2AR variant, wherein presence of the Ile164 β_2AR variant indicates the patient is likely to exhibit a poor bronchodilating response to the agonist.
- 7. The method of claim 6, wherein the agonist is selected from the group consisting of salmeterol, albuterol, metaproterenol, terbutaline and formoterol.
 - 8. The method of claim 7, wherein the agonist is salmeterol.
- 9. The method of claim 8, wherein the individual is suffering from asthma or COPD.
- 10. The method of claim 6, wherein the assaying step comprises contacting the sample with an antibody specific for the Ile164 β_2 AR variant.
- 11. A method for treating a patient suffering from asthma or COPD, which comprises

determining the patient's genotype for the +491PS and

making a treatment decision based on the genotype,

wherein if the patient has a heterozygous C/T genotype or a homozygous T/T genotype, the treatment decision is selected from the group consisting of:

- WO 01/06910
 - (a) prescribing a higher dose of a β -agonist than typically indicated for individuals having similar weight and symptoms;
 - (b) prescribing more frequent doses of a β-agonist than typically indicated for individuals having similar weight and symptoms;
 - (c) prescribing both a higher dose and more frequent doses of a β-agonist than typically indicated for individuals having similar weight and symptoms;
 - (d) not prescribing a β -agonist; and
 - (e) prescribing a β -agonist in conjunction with another bronchodilating therapy.
 - 12. The method of claim 11, wherein the agonist is selected from the group consisting of salmeterol, albuterol, metaproterenol, terbutaline and formoterol.
 - 13. The method of claim 12, wherein the agonist is salmeterol.
 - 14. The method of claim 11, wherein determining the patient's genotype comprises isolating from the individual a nucleic acid mixture comprising the two copies of the β_2AR gene, or a fragment thereof, that are present in the individual and determining the identity of the nucleotide pair at a position corresponding to the +491PS in the two copies in order to assign a β_2AR genotype to the individual.